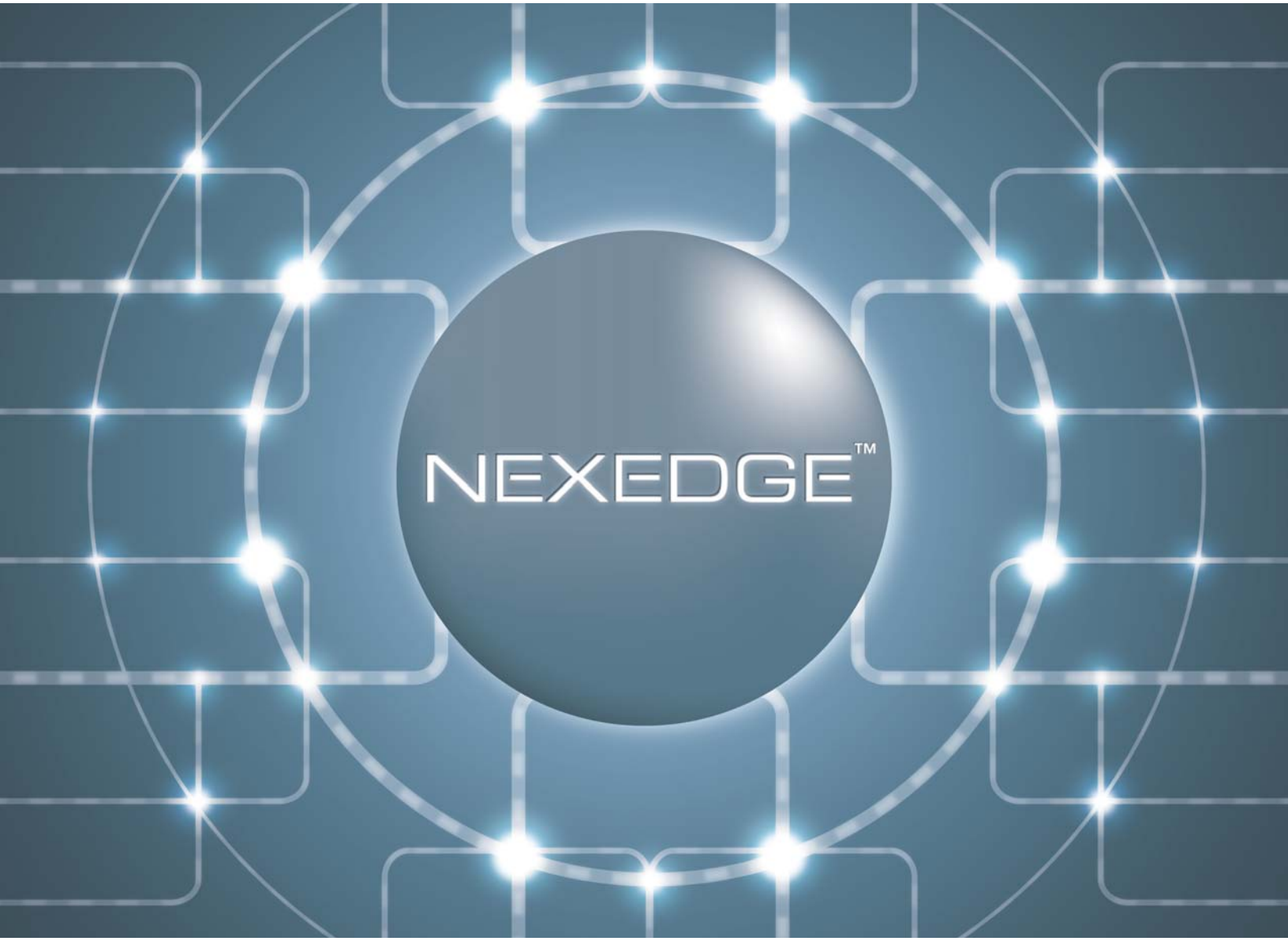
KENWOOD

Listen to the Future

KENWOOD DIGITAL SYSTEMS



- Digital Conventional
- Digital Trunking
- Digital Trunked Wide Area IP Networks
- FM Conventional & LTR® Trunking

KenwoodLandMobileRadio 25 Years

NEXEDGE™: Multiple Solutions – One System

All NEXEDGE™ products use advanced digital voice technologies and support both FM analog and new digital fleets. System type conversion or expansion only requires software options and/or additional base station units, i.e., no "forklift" upgrading. Kenwood offers high-power turnkey NEXEDGE™ conventional, trunked and wide area trunked IP network solutions with secure digital voice and an array of advanced digital feature sets for business and government sectors.

NXDN™ Digital Air Interface

NEXEDGE™ is powered by the NXDN™ digital air interface, an FDMA digital access methodology generated with optimized DSP coding, AMBE+2™ voice coding technology, unique filtering and a 4-level FSK modulation technique producing an industry-leading low bit error rate (BER) digital performance even at weak RF signal strengths.

- **Natural Sounding Digital Voice** The AMBE+2™ VOCODER, a state-of-the-art voice digitization technology, replicates an individual's natural human speech nuances accurately unlike early technologies that sounded unnatural and synthesized. The AMBE+2™ offers superior voice quality at varying signal strengths even at highway speeds.
- **Extended Range over FM** As RF signal strength weakens with distance, FM analog reception becomes increasingly noisy and intermittent. NXDN™'s low BER improves reception in fringe areas, thereby increasing the effective range by as much as twenty percent over FM.
- **Large Group & Individual ID Capacity** The NXDN™ subscriber air interface protocol supports 65,519 GID's & 65,519 UID's for system sharing and large organizations (maximum ID's available depend on operational mode). ID's can be organized by agencies, divisions, departments and individuals.
- **Spectrum Efficient Now** The NXDN™ digital air interface and equipment are capable of all channel bandwidths.
  - FM Analog @ 25 & 12.5 kHz Channels
  - NXDN™ Digital @ 12.5 & 6.25 kHz Channels

Digital Common Features

NEXEDGE™ supports common call features in both digital conventional and trunked modes.

- **Over-the-Air Alias** A calling units UID alphanumeric alias is sent over the air and displayed on a receiving unit's LCD, so there is no need to program every fleet alias in every radio.
- **UID/GID Validation** Each unit and talk group are validated in the operator system manager for access and call privileges.
- **Paging Call** Up to five UID unit-to-unit pages are dated, time stamped and stored for recall and review - useful for unattended radio messages and non-voice selective paging operations.
- **Emergency Call** Subscriber units can declare an Emergency to a console, an individual, a group or all groups. This signal can be triggered by a manual key, a footswitch (mobiles) or man-down tilt-switch (portables).
- **Remote Stun/Kill** Enables a dispatcher to temporarily or permanently disable a lost, stolen or compromised radio unit over the air for system security and personnel safety.
- **Remote Check** Enables a dispatcher to check if a unit is on or in range.
- **All Group Call** A selectable All Call GID calls all talk groups on the system for facility wide announcements, emergencies and evacuation scenarios.

NEXEDGE™

Digital Conventional Mode

NEXEDGE™ conventional systems offer extended system sharing capabilities beyond analog conventional systems. Also both FM analog & digital units canshare the same NEXEDGE™ RF channel!

- **RAN (Radio Access Number)** NXR-700/800 base units include a 16 RAN capacity conventional repeater controller for 16 user group site sharing (RAN range: 1-64; analogous to CTCSS/DCS use in FM).
- **1,000 GIDs** Large talk group ID capacity for group selective calling.
- **65,519 UIDs** Large unit ID capacity for individual selective calling.
- **Mixed Channel Type** FM & NXDN™ conventional units can share the same RF channel. Both subscriber units and bases demodulate incoming analog FM or NXDN™ digital calls and talkback or repeat the same mode (conventional channels only; must use 12.5 kHz narrow bandwidth).

Digital Trunking Mode

NEXEDGE™ trunking provides increased capacity, enhanced call capabilities, improved security and faster communications with-less user operation than conventional systems require.

- **Fast System Access** Channels selection is automatic and no user monitoring is required.
- **Enhanced Efficiency** Users share a pool of channels per site and thereby experience less busies during peak hours.
- **30 Channels @ Site** NEXEDGE™ trunked sites are capable of up to 30 channels each handling any VHF or UHF trunked site requirement.
- **Message Trunking*** Users are granted a traffic channel for the length of a two-way call thereby reducing interruptions (utilizes more system resources).
- **Transmission Trunking** Users are granted a traffic channel only during each push-to-talk, thus optimizing channel resources during peak traffic hours.
- **3,000 GIDs** Large talk group capacity for fleet dispatch operations.
- **3,000 UIDs** Large unit ID capacity for private unit-to-unit calling.
- **Call Queuing** Automatically stacks call requests when the system is busy and processes calls when a channel becomes available.

*Pre-emption will soft terminate a lower priority call and allocate the traffic channel for very important personnel, dispatchers or emergency calls.

- **8 Priority Levels with Pre-emption** Processes the call queue in order of priority. Pre-emption allocates a talk path for priority personnel, dis patch and emergency calls.
- **4 Priority Monitor ID's** Automatically switches radios to a higher priority call such as a dispatcher or supervisor, even when on a low priority call.
- **Late Entry** Permits subscriber units to join a group or individual call already in progress after powering on or entering system coverage.
- **Broadcast Call** Calls all fleets or all units in a fleet for emergencies and incident response scenarios.
- **Remote Group Add** Adds a new GID to subscriber units remotely over-the-air to form a workgroup for emergencies, special events, operations or incidents.
- **Failsoft Mode** If trunking capability is disabled, the system reverts to conventional operation so basic communications can continue.
- **ESN Validation*** Each subscriber unit has a unique factory embedded ESN validated by the system to protect against unauthorized access.
- **Control/Traffic Channel Switching** Designates a Traffic Channel as a new Control Channel should the original become disabled. Disabled Traffic Channels are automatically removed from service.

Multi-Site Trunked IP Network

The network option leverages the power of IP to link NEXEDGE™ digital trunked sites together for wide area call capabilities.

- **16 Site Network** Multiple trunked sites can be linked together as one network for campus, citywide, countywide, regional or inter-state communications.
- **LAN/WAN Connectivity** Scalable networks can be created over existing IT assets, private microwave, spread-spectrum links or carrier services using standard 10/100 Base-T Ethernet switches and routers. IPSEC VPN tunneling provides encryption and authentication for secure communications links within any IP network.
- **60,000 GID's & 60,000 UID's @ Network** Large subscriber capacity for shared networks and large fleets.
- **Automatic Roaming** Subscriber units automatically search for the best accessible sites while moving throughout a network. Subscriber units use advanced control channel hunting algorithms and RF signal strength (RSSI) monitoring to make accurate and prudent roaming and registration decisions.

Multi-Mode Flexibility/Migration Guaranteed

NEXEDGE™ equipment supports analog FM and NXDN™ digital modes providing operators a self-paced migration path from analog to fully digital.

- **All Mode Capable** All NEXEDGE™ subscriber equipment includes analog conventional, analog LTR trunked, NXDN™ conventional and trunked digital modes. All NEXEDGE™ base /repeater units include analog conventional, NXDN™ conventional and software upgrade to NXDN™ Trunked & Multi-Site capability (see table to the right).
- **NXDN Traffic Channel Sharing** "Shared" repeater operation allows NXDN trunked Traffic Channels to be shared with analog Conventional channels or with analog LTR® trunked logic providing a migration path from analog to all digital fleets.
- **High-power Coverage** NEXEDGE™ systems use analog FM power amps and site management equipment for both analog FM and NXDN™ digital modes saving on migration or build out costs while retaining a large coverage system footprint.

	NX Subscriber Units	NXR Base Stations
Digital Conventional Mode	●	●
Digital Trunked Mode	●	○
Digital Trunked IP Networks	●	○
FM Conventional Mode	●	●
Mixed Channel Type (FM/NXDN™ Conventional)	●	●
FM: 25 & 12.5 kHz Channels	●	●
Digital: 12.5 & 6.25*1 kHz Channels	●	●
FM*2: QT/DQT, 2-Tone, DTMF, FleetSync® /II	●	●
FM LTR® Mode (NXR requires ext. LTR® logic)	●	○
FM Power Amps for FM & Digital Modes	—	●
FM Conventional Repeater Control Included	—	●
External FM Controller Interface	—	●
NXDN™ Traffic Channel Sharing (w/ LTR® & Conventional analog)	—	●

● Included/supported ○ Option

*1 NXR-700/800 6.25 kHz operation requires a KXK-3 OCXO option per site.
*2 NXR repeats 2-Tone, DTMF & FleetSync®/II in-band signaling; QT/DQT sub-audible signaling is decoded/encoded.

Secure Voice

NEXEDGE™ offers voice security that enhances personnel safety, reduces risk exposure and thwarts competitive breeches by protecting sensitive communications for your facilities and operations.

- **Inherent Level of Security** The NXDN™ digital air interface itself prevents casual eavesdropping.
- **FM & NXDN™ Voice Security Options** Protects against more sophisticated adversaries.

	FM Modes	NXDN™ Modes	Security Level
Frequency Inversion	●	—	Low
Encryption Board Control (option port for aftermarket boards)	●	—	Basic to Very High
NXDN™ Digital Scrambler	—	●	Basic
AES Encryption Module Option (future release)	—	○	Very High

● Included ○ Option

Integrated Data Services

NEXEDGE™ includes unit ID, emergency, GPS location, status and messaging capabilities in both FM and NXDN™ digital modes*.

- **Fleet Management & Location**
- **Messaging & Data**
- **Emergency**

	Features
FM: FleetSync®/II	PTT ID, Emergency, Status Messaging, GPS AVL* Short & Long Text Messaging*
NXDN™	Unit & Group ID (CAI), Emergency, Status Messaging*, GPS with Voice*, Short (100 byte) & Long (4096 byte) Data Messaging*

* FleetSync® & NXDN™ compatible Status Messaging, Short/Long Data-Text Messaging and GPS AVL require compatible software applications.
NXDN™ GPS AVL and FleetSync® GPS AVL require GPS options installed in NX subscriber units.

System Management

The NEXEDGE™ KPG-110SM System Manager reduces operational and maintenance costs with remote programming, firmware uploading privileging, monitoring & diagnostics capability from an operator-friendly secure Windows® application (for NXDN™ Trunked sites and networks only).

- **Secure Access** USB encrypted hardware keys limit System Manager and site access to authorized personnel only.
- **System Parameters** Operators are provided with full site and network configuration control by remote connection. **Sites can be accessed directly on-site or through dialup modem or IP connection.**
- **Subscriber Privileging** UID/GID validation, 127 UID/127GID Class-of-Service entries and 5,000 Fleet UID/GID lists permit operators to grant certain access privileges, call types, Inter-site Call capabilities and queue priority for all group and individuals on a system.
- **Real-Time Activity Monitoring** All sites traffic can be monitored real time for management and troubleshooting purposes.
- **Call Logs** Operators can download detailed call activity of any channel, site, individual or group for traffic, security and incident analysis.
- **Channel Loading** Graphs peak usage and blocking statistics to identity possible system traffic / capacity issues.
- **NXR Diagnostics** Operators can remotely monitor each NXR units' hardware and Ethernet network interface to indentify possible problems at any site.
- **NXR Firmware Uploading** Operators can remotely update operational firmware in all NXR units without ever having to drive to a site.

Kenwood reserves the right to change specifications without prior notice or obligation.
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NXDN™ is a trademark of Kenwood Corporation and Icom Inc.
NEXEDGE™ is a trademark of Kenwood Corporation.

Listen to the Future

Kenwood has always connected with people through sound. Now we want to expand the world of sound in ways that only Kenwood can, listening to our customers and to the pulse of the coming age as we head toward a future of shared discovery, inspiration and enjoyment.

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